

Claims

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A drive system for a vehicle, especially a commercial vehicle such as an agricultural or industrial tractor, the vehicle having at least one first wheel that is driven by an associated axle or single-wheel drive motor and at least one second wheel, in a drive train of which a gearbox that can be shifted between at least two speed transmission steps is arranged, comprising:

a device for the detection of a shift command; and,

a control unit, which in the presence of a shift command automatically applies a greater load at least on the drive motor driving the first wheel, controls the shifting operation of the change-speed gearbox of the second wheel and then lowers the load of the drive motor driving the first wheel.

2. A drive system according to claim 1, wherein both the at least one first wheel and the at least one second wheel are driven by associated axles or single-wheel drive motors, respectively, and wherein a shiftable transmission is arranged at least between one of the drive motors and the associated wheel.

3. A drive system according to claim 1 wherein at least two vehicle axles with at least two wheels, respectively, are provided, and wherein the wheels of at least one first axle are driven by a joint axle drive motor or by single-wheel drive motors that are assigned to each wheel and the wheels of at least one second axle are driven through at least one shiftable transmission by a vehicle drive train, by an axle drive motor or by single-wheel drive motors.

4. A drive system according to claim 1, wherein at least one first wheel through a first shiftable transmission is driven by a first single-wheel drive motor and at least one second wheel through a second shiftable transmission is driven by a

second single-wheel drive motor, and that the control device in the presence of a shift command initially performs a shift of the first transmission while raising the load of the second single-wheel drive motor and subsequently performs a shift of the second transmission while raising the load of the first single-wheel drive motor.

5. A drive system according to claim 1, wherein a clutch is arranged in a drive train comprising a change-speed gearbox.

6. A drive system according to claim 2, wherein at least one electric machine or a hydraulic motor is provided as the axle or single-wheel drive motor.

7. A drive system according to claim 6, wherein at least one electric energy storage unit that can be mounted on the vehicle serves as the energy source for the electric machine.

8. A drive system according to claim 6, wherein a generator that is driven by an internal combustion engine serves as the energy source for the electric machine.

9. A drive system according to claim 8, wherein the electric machine is designed such that the electric machine can be operated both as an electric motor driving the associated wheel and as a generator braking the wheel.

10. A drive system according to claim 9, wherein at least one converter and an intermediate circuit are arranged downstream from the generator in such a way that the generator can be driven electrically by the power released by the electric machine operating as a generator in the electric braking operation and thus operate as an electric motor.

11. A drive system according to claim 2, wherein the shiftable transmission comprises a planetary gearbox or a standard transmission.

12. A drive system according to claim 2, wherein at least one speed-reducing final drive transmission, especially a planetary gearbox, is arranged downstream from the axle or the single-wheel drive motor.

13. A drive system according to claim 2, wherein the single-wheel drive motor is essentially arranged within a wheel rim.

14. A drive system according to claim 2, wherein the shiftable transmission is essentially arranged within a wheel rim.

15. A drive system according to claim 12, wherein the final drive transmission is essentially arranged within a wheel rim.